

# Hazardous Waste & Risk Minimization in Schools



*presented by*  
**Susan Hahn**  
**Pollution Prevention Specialist**  
**County of San Diego**  
**Department of Environmental Health (DEH)**  
**Hazardous Materials Division (HMD)**



# Overview

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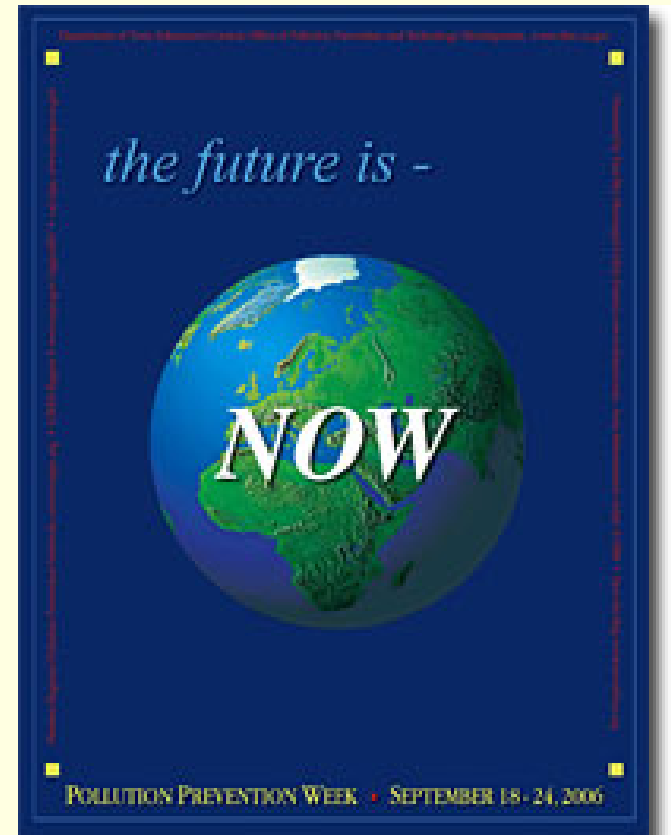
- Risk Minimization
- Waste Minimization
- Pollution Prevention



# Pollution Prevention (P2)

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**“Compliance with laws and regulations is the first step towards pollution prevention.”**



# Why is P2 & Waste Minimization Important in Schools?

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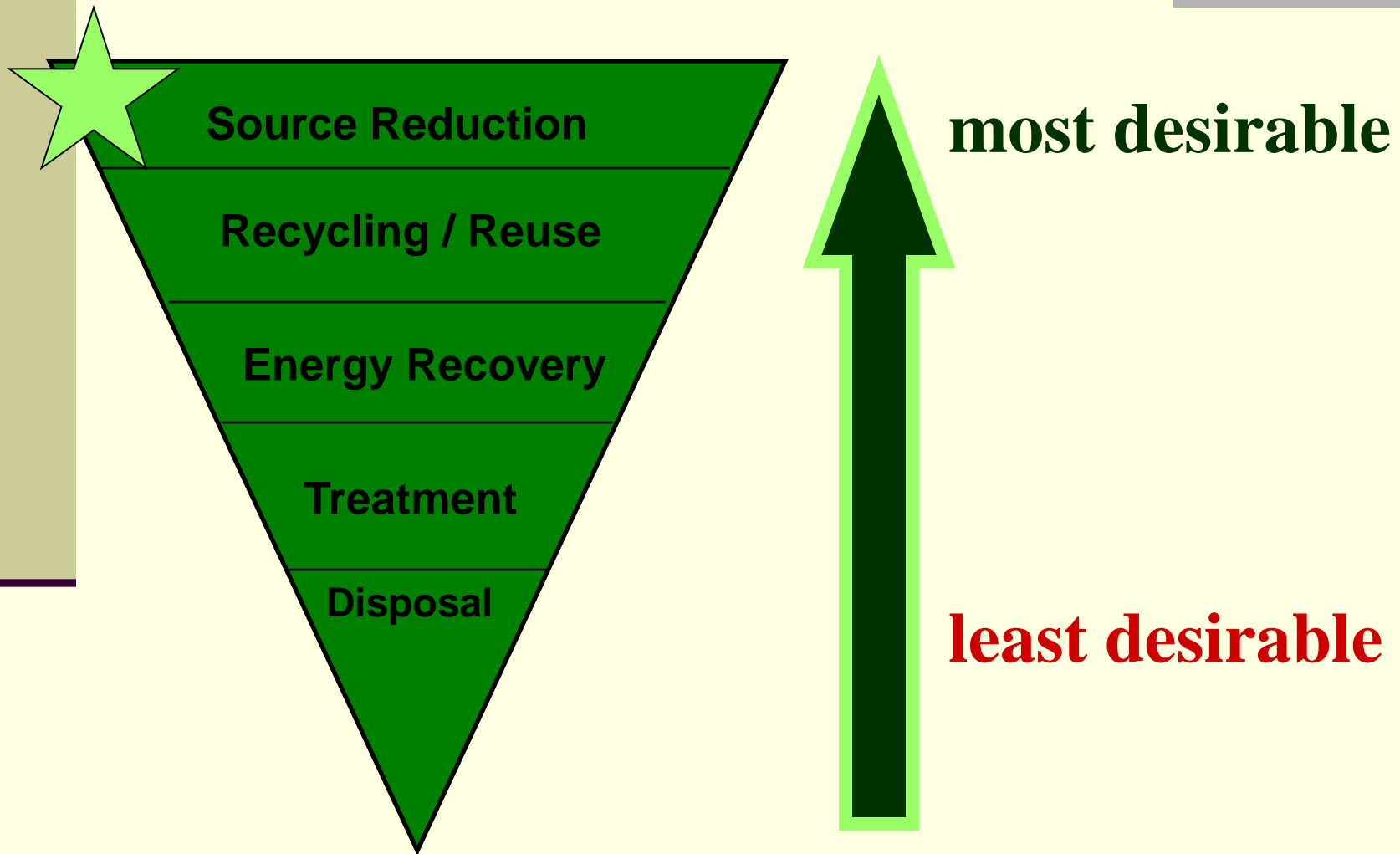
- Prevent waste from being released into environment, from harming students and / or personnel.
- Teaches environmental responsibility.
- Positive example to community.
- Encourages safety.
- Saves money.



# Pollution Prevention (P2)

## Waste Management Hierarchy

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# Source Reduction

- Otherwise known as Waste Prevention
- Examine what products are purchased and determine the waste it will generate.



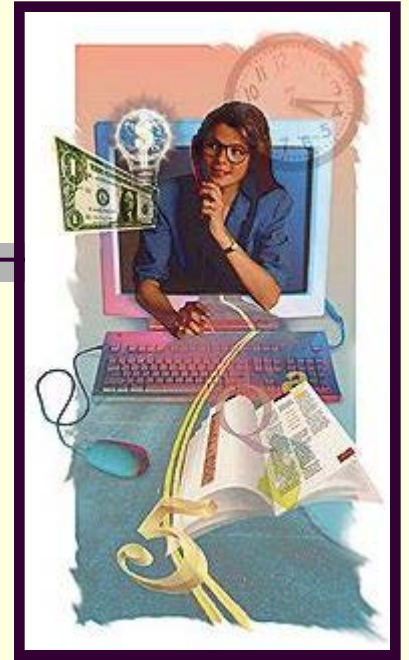
# Ordering

- Check first – hazardous or not?
- If yes to hazardous, then may require:
  - Special Handling and / or Storage.
  - Spill Kit.
  - Designated waste container.
  - Training for personnel handling chemical - to ensure proper storage, handling and spill response.
- Consider a non-hazardous chemical!



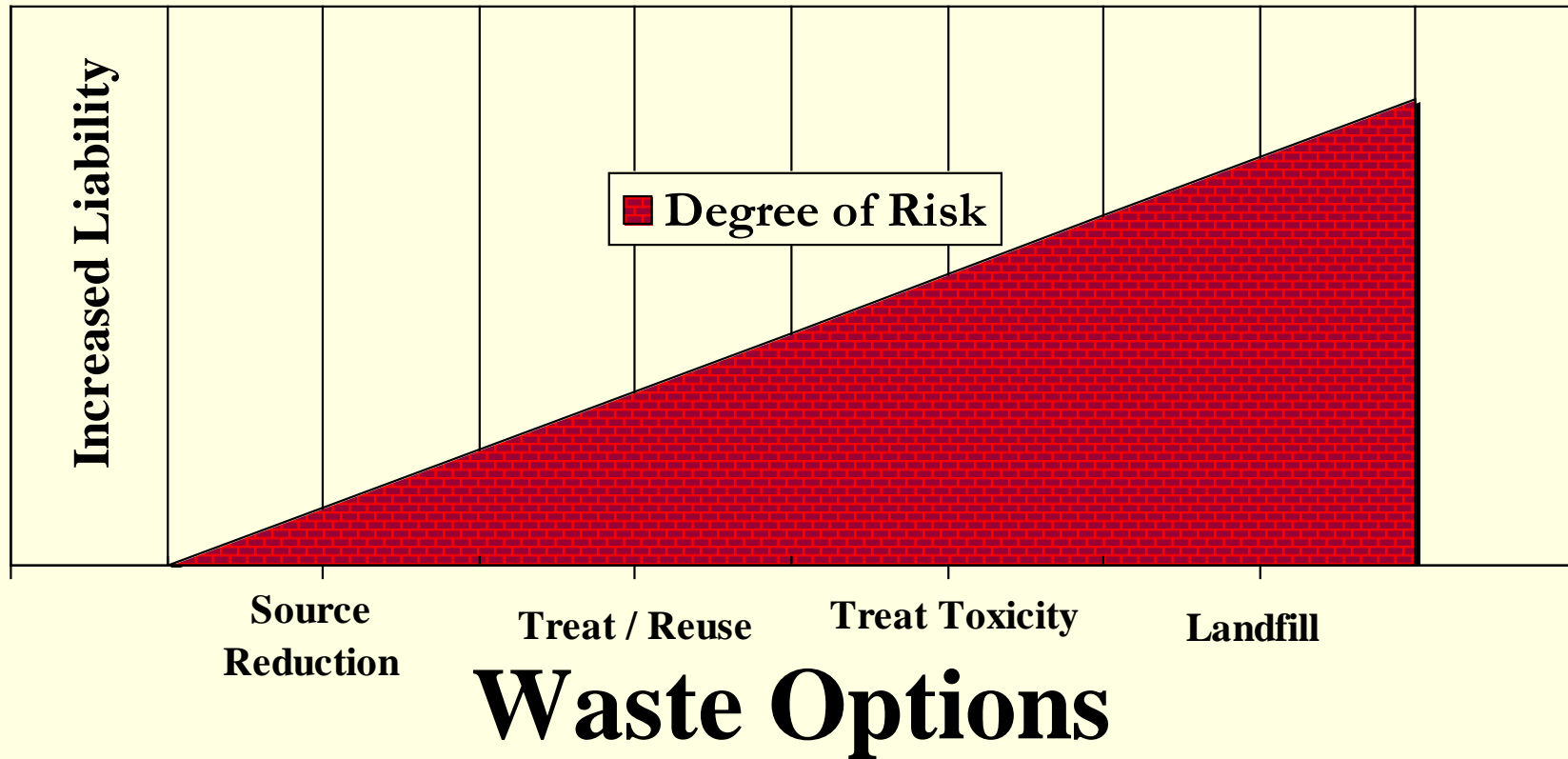
# Purchasing & Materials Management

- Only purchase what will be used for a specific time frame – no longer than 2 years, things change.
- Check the shelf life of product
- Check the options product in which a way the product can be purchased.
  - For example, stains used in biology can be purchased as dry solids versus as a solution.
  - Solutions tend to be less effective and expire quicker than the solid.
  - The solid can be made into the solution as needed and will last longer





# Liability Increases with Disposal



# Nationwide Attention

## **MISMANAGED HAZARDOUS** **CHEMICALS in SCHOOLS**

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- Agency for Toxic substances and disease Registry (ASTDR) conducts national public health surveillance of chemical incidents through its Hazardous Substances Emergency Events Surveillance (HSEES) system
- 423 Chemical incidents in schools in 15 reporting states from 2002-2007
- Mercury was the most common chemical released.

# Imperial County, CA

- On Jan 29, 2009 students at Calexico HS were handling a blood pressure cuff which burst releasing about 2 tablespoons of mercury.
- 2 tablespoons of mercury ~ 1 lb
- School officials were unaware of the release until Jan 30<sup>th</sup>.
- School reopened Feb. 6. lost of 4 school days.



# Imperial County, Ca

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- 200 people had been in contact with the mercury
- 28 homes inspected
- 8 homes, plus contents had to be decontaminated
- 3 families displaced
- Cost ~ \$100,000.

# Mercury in Schools

- Mercury is found throughout all schools
  - Nurses office
  - Science classrooms / laboratories
  - Auto Repair Classes
  - Electrical Systems



# Mercury Releases

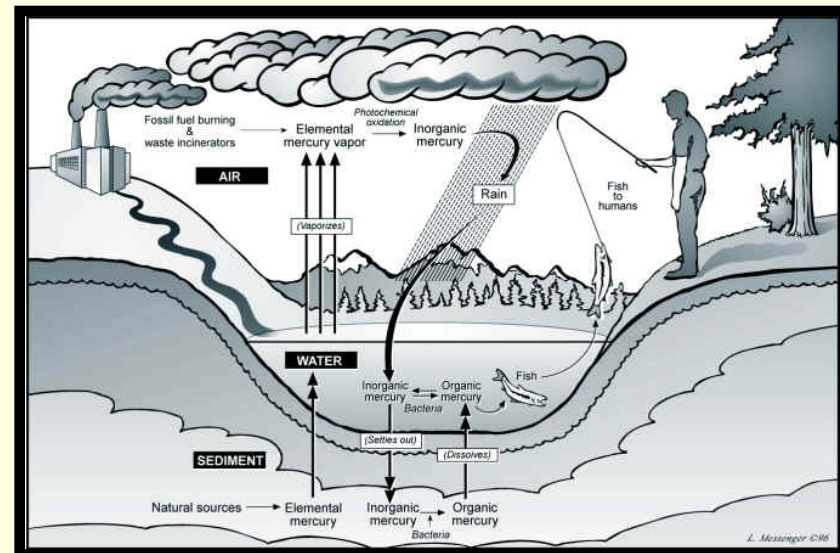
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- Broken/Spilled mercury must be managed as a hazardous waste:
  - Area must be evacuated until air monitoring by professional completed
  - Risk harmful exposure to students and personnel
  - Costly – all areas must be managed as hazardous waste

# Mercury Spills / Mercury Dangers

- Vaporizes at room temperature
- Can be tracked throughout school and environment
- Harmful to the brain and nervous system in humans; especially children
- Mercury spills costly for schools



# Remember the “Mad Hatter”

- Until the 1940's Mercury was used in the making of hats – Danbury, Connecticut
- Exposed workers experienced mercury poisoning- drooling, hair loss, mental problems, .....
- TODAY, Mercury remains in the nearby river beds





# Mercury Vacuum

- Vacuums up liquid elemental mercury, passes it through a separator and into a removable plastic jar.

- Charcoal filter model purifies exhaust air of mercury vapor.



# If your School continues to handle Mercury Containing Devices.....

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- Are they stored to prevent breakage?
- Are all handlers aware of Mercury (Hg) hazards?
  - Trained for spill management?  
Are students aware as well?
  - Hg spill kit readily available?
  - Evacuation Procedures?
  - Who will conduct air monitoring?
  - Know who to notify in event of spill?
  - Knowledgeable contractor?



# Implement a Mercury Elimination Program

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- Make a COMMITMENT!
- Put together a Team!
- Develop a Plan; include costs
- Conduct a Mercury Audit
- Review Audit & Evaluate
- Collect all unnecessary mercury items
- Have registered hauler remove

# Cheaper and Easier to Recycle Mercury than Dispose of as Hazardous Waste

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## Mercury Recyclers

- [www.ehso.com/mercury.php](http://www.ehso.com/mercury.php)
- [www.almr.org/](http://www.almr.org/)
- [www.noharm.org/library/docs/Going\\_Green\\_2-7\\_List\\_of\\_Mercury\\_Recycling\\_Comp.pdf](http://www.noharm.org/library/docs/Going_Green_2-7_List_of_Mercury_Recycling_Comp.pdf)

## More info on Mercury Waste

- [www.dtsc.ca.gov/HazardousWaste/Mercury/index.cfm#Types\\_of\\_Mercury\\_Products](http://www.dtsc.ca.gov/HazardousWaste/Mercury/index.cfm#Types_of_Mercury_Products)
- [www.epa.gov/mercury/schools.htm](http://www.epa.gov/mercury/schools.htm)



# Chemicals are found in .....

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- Science classes / labs
- Arts / Drama classes
- Auto Repair / Auto Body Shop
- Trade and Technical Classes
- Facilities Closets / Store Rooms



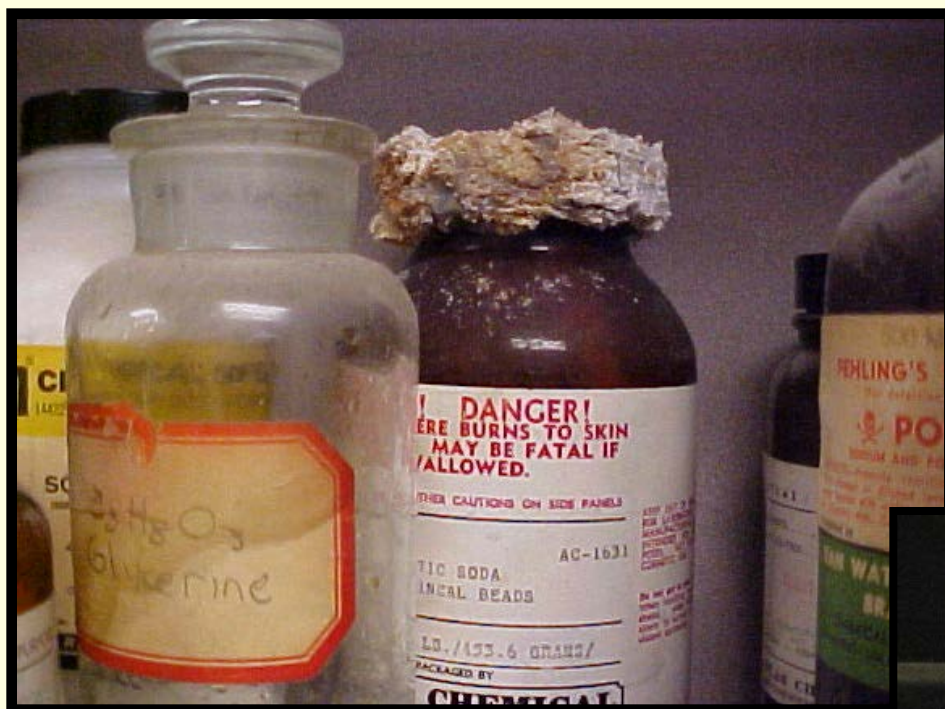
# Improper Chemical Storage

- Outdated, unlabeled and unknown chemicals
- Improperly stored in alphabetical order
- Expired chemicals can become unstable and reactive.....!!!!!!!



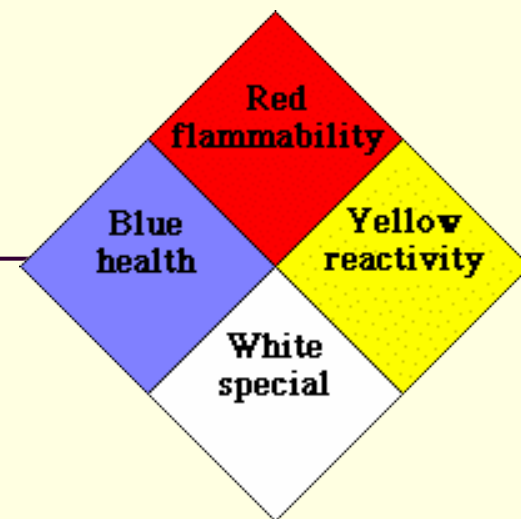


# Old Chemicals



# Chemical Storage

- Sturdy cabinet with locks
- Ventilated area
- Organized by Hazard Category
- Chemical Compatibility Families should be kept together
- Remember nitric acid should ALWAYS be stored separately!





# How is Your Schools Chemical Storage Area?

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- Are there old chemicals?
- Were the chemicals placed in proper storage?
- Were old chemicals properly disposed?
- Is there a system for proper chemical storage to avoid dangerous chemical reactions?



# Chemical Incidents can...

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- Puts students and school personnel at risk from exposure
- Disrupt school schedules and can cost thousands of dollars to clean up
- Result in lost school days
- Pricey cleanup costs

# Chemical Cleanout

- EPA -  
Schools Chemical  
Cleanout Campaign  
(SC3)

[www.epa.gov/epawaste/partnerships/sc3/index.html](http://www.epa.gov/epawaste/partnerships/sc3/index.html)



# LEAN Thinking & 6S Concept

(derived from the Toyota Production System)

- **Safety:** Personal protective equipment.
- **Sort:** Get rid of what's not needed. Be ruthless.
- **Set in Order:** Organize what belongs.
- **Shine:** Clean everything.
- **Standardize:** Assign tasks.
- **Sustain:** Create checklist and at least annually review.



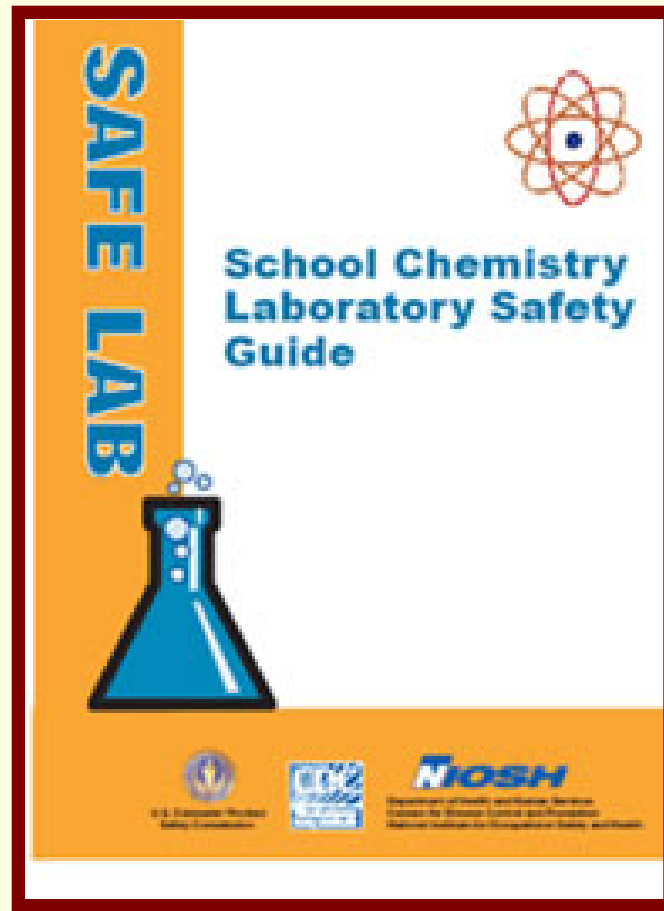
# Chemical Management Resources

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- Science teacher's "Safety Bible"  
Flinn Chemical and Biological Catalog  
Reference Manual  
[www.flinnsci.com/catalog\\_request.asp](http://www.flinnsci.com/catalog_request.asp)
- Chemical Management Resource  
Guide for School Administrators  
[www.epa.gov/oppt/pubs/chemmgmt/index.htm](http://www.epa.gov/oppt/pubs/chemmgmt/index.htm)

# National Institute of Occupational Health & Safety (NIOSH)

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[www.cdc.gov/niosh/docs/2007-107/](http://www.cdc.gov/niosh/docs/2007-107/)

# EPA - Healthy School Environments Assessment Tool (HealthySEAT)



HealthySEAT V2 - [Manage District Policies/Programs]

Exit HealthySEAT | Go To EPA Schools Website | Contact Us

Main Menu > Customize for District > Manage District Policies/Programs

## Manage District Policies/Programs

Use this screen to track the status and other details of district-level policies and programs.

Policy/Program Selectors: [Navigation Buttons] Policy/Program 2 of 19

Go To Policy/Program... [Dropdown]

**Save and Return to Customize for District**

**Edit This Policy/Program**

Save Edits Cancel Edits

**Add New Policy/Program**

**Delete This Policy/Program**

**Policy/Program \***

Chemical management policy designed to reduce chemical hazards in schools.

Status: [Dropdown]

Sort Order: \* 20

Additional details (e.g., date, reference, location of policy, availability of training)

[Text Area]

[www.epa.gov/schools/healthyseat/index.html](http://www.epa.gov/schools/healthyseat/index.html)

# Rehab the LAB



Safe Labs Don't Pollute

Excessive Risk Chemicals list  
Risk Exceeds Educational Utility

King's County – Seattle, Washington

[www.govlink.org/hazwaste/schoolyouth/rehab/](http://www.govlink.org/hazwaste/schoolyouth/rehab/)



# Where to Start a Pollution Prevention Project?

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- Review your waste manifests
- Which waste stream is the largest?
- Which waste costs the most?
- Which waste is the most hazardous to the students, personnel and environment?

# Schedule a Dumpster Peek

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- Just before a pick up
- What is the majority of waste in there?
- Can it be recycled?
- Where was it generated and for what purpose?
- Go to the very beginning ..... the source
- Can it reduced?
- It all starts with Source Reduction!



# Waste Minimization

## Waste is going to be generated

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- Plan project so least amount of waste is generated
- Waste will be recover and / or reused on-site
- Recycled off-site
- Treat wastes to reduce volume or toxicity
- Least desirable...Dispose of wastes in a manner that protects air, water quality, land quality, and human health and safety

# Curriculum

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- Get students involved
- Add waste management to project & learning
- Teach students what happens to waste
- Encourage brainstorming for how to minimize waste
- Businesses work on this daily

# Team Project for P2 Projects

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- Form an environmental group composed of:
  - Students
  - Teachers
  - Facilities personnel
  - Interns
- Group can
  - Inspect school for areas of hazardous waste
  - Come up with ways to reduce waste, save dollars, etc.

# Questions?

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***TIME FOR THE POST SURVEY***



# Thank you

Susan A. Hahn  
Pollution Prevention Specialist  
Hazardous Materials Division  
County of San Diego  
619-338-2324  
[Susan.Hahn@sdcounty.ca.gov](mailto:Susan.Hahn@sdcounty.ca.gov)